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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/665,204

09/22/2003

Gang Wang

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ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP
KRATZ, QUINTOS & HANSON, LLP
1420 K Street, N.W.
Suite 400
WASHINGTON, DC 20005

EXAMINER

SEFER, AHMED N

ART UNIT

PAPER NUMBER

2826

MAIL DATE

DELIVERY MODE

06/28/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/665,204

Applicant(s)

WANG ET AL

Examiner

A. Sefer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-21 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-21 and 23-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/30/07.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The Information Disclosure Statement filed on 5/30/2007 has been considered.

Response to Amendment

2. The amendment filed April 17, 2007 has been entered and new claims 24 and 25 have been added.

Response to Arguments

3. Applicant's arguments with respect to claims 18 and 19 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe USPN 5,654,578.

Watanabe discloses in fig. 2 a semiconductor light-receiving device for high-speed and large-capacity optical fiber communication comprising: a semiconductor substrate of a first conduction type 101; a buffer layer 103 of the first conduction type that is formed on the semiconductor substrate and having a lower impurity concentration than the semiconductor substrate; a light absorption layer 107 that is formed on the buffer layer; a semiconductor layer 108 of a second conduction type that is formed on the light absorption layer; and a high-

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concentration semiconductor intermediate layer 104 of the first conduction type that is interposed between the buffer layer and the light absorption layer having a higher impurity concentration than the buffer layer (col. 6, lines 54-63); wherein said substrate and layers are arranged to form a semiconductor light-receiving device; the high concentration semiconductor intermediate tunneling layer and the buffer layer being made of an identical material or InP (as recited in claim 25)

Note that generating carriers in accordance with incident light or allowing electrons to pass is a desired result rather than a structural limitation. See *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971; *In re Danly*, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 17-21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe in view of Matsuoka et al. ("Matsuoka") USPN 5,557,117.

Watanabe discloses in fig. 2 a semiconductor light-receiving device for high-speed and large-capacity optical fiber communication comprising a substrate 101; a semiconductor layer 102 of a first conduction type that is formed on the substrate; a buffer layer 103 of the first

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conduction type that is formed on the semiconductor layer; a light absorption layer 107 that is formed on the buffer layer; a semiconductor layer of a second conduction type 108 that is formed on the light absorption layer; a semiconductor intermediate tunneling layer 104 of the first conduction type that is interposed between the buffer layer and the light absorption layer and having a higher impurity concentration than the buffer layer (col. 6, lines 54-63), wherein said substrate and layers are arranged to form a semiconductor light-receiving device, the high concentration semiconductor intermediate tunneling layer and the buffer layer being made of an identical material or InP (as recited in claim 24), but does not disclose a seminsulating substrate.

Matsuoka discloses in fig. 2 a semiconductor light-receiving device for high-speed and large-capacity optical fiber communication comprising: a semi-insulating substrate 1; a semiconductor layer 2a of a first conduction type that is formed on the semi-insulating substrate.

Therefore, in view of Matsuoka's teachings, one having an ordinary skill in the art at the time the invention was made would be motivated to modify Watanabe's device by incorporating a seminsulating substrate. The motivation would have been to achieve electrical isolation of individual devices.

Note that generating carriers in accordance with incident light or allowing electrons to pass is a desired result rather than a structural limitation. See *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971; *In re Danly*, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

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Re claims 18 and 19, Watanabe discloses (col. 6, lines 54-63) a buffer layer having impurity concentration within the recited range. Furthermore, Watanabe discloses the intermediate layer having an impurity concentration and thickness within the recited range.

Re claim 20, Matsuoka discloses a contact layer 2a of first conduction type interposed between the substrate and the buffer layer 3a with a predetermined potential being supplied to the contact layer through an electrode 15a.

Re claim 21, Watanabe discloses the light absorption layer and the semiconductor layer of the second conduction type form a mesa structure, with light entering the light absorption layer through a side surface of the light absorption layer that is exposed in a process of forming the mesa structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ANS
June 22, 2007



A. Sefer
Patent Examiner
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